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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,152	11/26/2003	Chih-Chao Yang	YOR920030506US1 (17077)	9245
23389	7590	04/12/2006	EXAMINER RICHARDS, N DREW	
SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA SUITE 300 GARDEN CITY, NY 11530			ART UNIT 2815	

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/723,152

Applicant(s)

YANG ET AL.

Examiner

N. Drew Richards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-25 is/are pending in the application.
- 4a) Of the above claim(s) 7-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species Ia, claims 1-6, in the reply filed on 7/8/05 is acknowledged.

Drawings

2. The replacement drawings were received on 2/8/06. These drawings are partially acceptable. The replacement drawings that label figures 4B and 5B as prior art are acceptable. However, the third replacement sheet labels figure 9B as prior art instead of figure 9A. Since figure 9B is understood as depicting applicant's invention (see paragraph [0024] of applicant's specification), it seems that labeling figure 9B as prior art is in error. Applicant is required to submit a further replacement sheet for figures 9A and 9B that labels 9A as prior art and not 9B. Further, since this appears to be an honest mistake by applicant, and not done with deceptive intent, figure 9B is not being treated as admitted prior art in this action. However, if applicant fails to correct this figure, or argues that the replacement sheet filed 2/8/06 is correct, then figure 9B as prior art will be applied against applicant's claims for any further prosecution.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as

either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 3-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al. (U.S. Patent No. 6,383,920 B1).

Wang et al. disclose in figure 2H, for example, a semiconductor interconnect structure 200 comprising first level of metal conductor 206 and second level of metal conductor 222 and one level of insulator material 208/210 formed there between, the structure further comprising a dielectric metal contact via 216 formed at the insulator material level for electrically connecting the first metal and second metal conductors, wherein the metal contact via includes metal liner material 218 surrounding the metal contact via, a portion of the metal liner extending partially into an adjacent metal level of the first and second metal levels (liner 218 extends partially into the second level of metal conductor), in interlocking relation therewith.

With regard to claim 3, the interconnect structure forming a back-end-of-line interconnect is merely a product by process limitation that does not structurally distinguish over the prior art.

With regard to claim 4, the one level of insulator material 208 is disclosed as being a low-K material. Since "low" is not clearly defined in the present application, the material of 208 is considered "low" as it's dielectric constant is lower than some other materials.

With regard to claim 5, the language of this claim does not positively recite that the multiple levels of metal are levels other than the first and second levels of claim 1 or that the insulator material, via, and metal liner are additional structures other than those of claim 1. This claim merely further adds that a level of insulator (with the associated via and metal liner) is formed between each level of metal. In the case of Wang et al., since only two metal levels are shown, Wang et al anticipates this claim since each metal level of Wang is separated by the claimed insulator material, via, and metal liner.

With regard to claim 6, each metal contact via formed at each insulator material level are aligned.

Response to Arguments

5. Applicant's arguments filed 2/8/06 have been fully considered but they are not persuasive.

Applicant has argued that Wang et al. does not anticipate the claimed invention because Wang et al. does not teach **only** a portion of the metal liner extends partially

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into an adjacent metal level of the first and second metal levels. This is not persuasive. First, the claims do not recite **only** a portion, but merely recites "a portion." Thus, applicant's arguments dealing with only a portion are not relevant to the invention as claimed. Second, the claims merely recite "a portion" "extending partially" into the adjacent metal level. Thus, the language of the claims does not preclude the liner extending entirely through the metal level, as shown in figure 2H of Wang et al. Further, "a portion" can be considered to be only part of the liner that extends into the metal level such that "a portion" only extends partially into the metal level. For example, if the bottom half of the height of the liner in the metal level is considered "the portion", then this half extends only partially into the metal level as claimed. As such, Wang et al. reads on the claims since the claims do not preclude the liner as a whole extending entirely through the metal level or alternatively because the claims only recite "a portion" of the liner "extending partially" which is also taught by Wang et al.

Applicant also argues that the method steps of applicant's figures 10A-10H are clearly distinct from the methods of Wang et al. figure 2B-2L. This argument is not well understood. First, the method of how either applicant's invention or the device of Wang is formed is not at issue since the claims pending are directed towards a device, not a method. Second, it is not clear as to what structural difference is being argued through the method steps.

Thus, applicant's arguments are not persuasive and the rejections are considered proper.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on (571) 272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



N. Drew Richards
AU 2815